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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,704	12/10/2001	Shane J. Trapp	M4065.0369/P369-A	3229

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP  
2101 L STREET NW  
WASHINGTON, DC 20037-1526

EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 01/29/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/006,704

Applicant(s)

TRAPP, SHANE J.

Examiner

Lynette T. Umez-Eronini

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 26-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-31, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 32 and 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 32 and 35 are objected as being dependent respectively from canceled claims 24 and 36. Accordingly, the claims 32 and 35 have not been further treated on the merits.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 27 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.  

In claim 27, lines 1-4, “. . . wherein said fluorocarbon is at least one member selected from the group consisting of carbon tetrafluoride, fluorohydrocarbons, . . . and chlorofluorohydrocarbons” is indefinite because carbon tetrafluoride is a member of group of fluorocarbons. It is suggested to delete “carbon tetrafluoride.”
4. Claim 33 provides for the use of “the composition of claim 26,” where claim 33 recites “said composition is flowed into a reaction chamber containing said semiconductor device . . .” is indefinite because it is unclear what composition applicant is intending to encompass. It is suggested “said composition is flowed into a reaction chamber containing said semiconductor device such that” be deleted.

***Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 26-31, 33, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamrah (EP 0 553961 A2).

Hamrah teaches an etch chemistry of  $\text{CHF}_3$ , Ar, and  $\text{CF}_4$  (page 2, line 16 and Abstract) in addition to a gaseous source of hydrogen, such as ammonia (page 2, lines 32-33 and Abstract), which reads on;

a gaseous mixture of at least one fluorocarbon and ammonia, **as in claim 26**;

at least one member selected from the group of fluorocarbons as recited in **claims 27, 28, and 29**;

at least two members selected from the group of said fluorocarbons as recited in **claim 30**.

Hamrah also teaches the flow rate of 30 sccm  $\text{CHF}_3$  and 7 sccm ammonia (page 9, lines 2-5), which reads on a flow ratio of 30:7 (4:1) that encompasses the flow rate ratio of said fluorocarbon to said ammonia is not less than about 3:1, **as in claim 33**; and said flow rate ratio is within the range of about 3:1 to about 20:1 **as in claim 34**.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamrah (EP '961 A2) as applied to claim 26 above, and further in view of Becker et al. (US 6,015,760).

Hamrah differs only in failing to teach wherein said fluorocarbon is a combination of CF<sub>4</sub>, CHF<sub>3</sub> and CH<sub>2</sub>F<sub>2</sub>.

Becker teaches anisotropic etching takes place primarily in the vertical direction so that feature widths substantially match the photoresist pattern widths (column 1, lines 40-43); and anisotropic etching is utilized when feature sizing after etching must be maintained within specific limits so as not to violate alignment tolerances or design rules (column 1, line 43-46); and selectively etching SiO<sub>2</sub> layer with respect to a nitride layer by using a fluorinated chemical etchant system that comprises: CF<sub>4</sub>, CHF<sub>3</sub> and a CH<sub>2</sub>F<sub>2</sub> additive material (column 4, lines 16-18) and "in this way, the etching process provides for the formation of sidewalls in etched layers which have a substantially vertical profile (column 4, lines 29-31).

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claim invention to modify Hamrah's etchants by combining the etchants as taught by Becker for the purpose meeting specific limits that

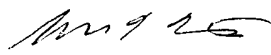
Art Unit: 1765

would not violate alignment tolerances or design rules design rules (Becker, column 1, lines 43-46).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-972-9310 for regular communications and 703-972-9311 for After Final communications.

ltue  
January 23, 2003

  
BENJAMIN L. UTECH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700